GEM FIELDS OF THE WORLD

WHERE SOME OF THE RAREST OF JEWELS ARE FOUND.

A Ruby Mining Speculation in Burmah that Proved Disastrous to Englishmen—The Fields of America—The Methods of Mining in Various Countries.

Little was known of the ruby mines of Burmah until England finally conquered the Burmese kingdom in 1888. This was accomplished by two expensive wars, and concessions for working the mines were exacted from the King as indemnity. Such was the idea of their richness, that when the Burmah Ruby Mines Company, Limited, was organized in London, the spectacle was witnessed of white-haired millionaires being clubbed away from a banker's office which they blocked in their eagerness to obtain a stock that was subscribed for three times over before the books were opened for the public, immediately selling for three times par. This stock, however, has not earned a dividend up to this day, and is quoted at less than 20 instead of 300. Last year the company's payment to the Indian Government was reduced to encourage the enterprise, which has proved very unprofitable. The climate is the greatest enemy of the European. Of fifty English officers who visited the mines forty-eight had the local fever; the other two had had it before.

The rubies, always associated with the ruby-red spinel, occur in a layer of sand and gravel in the valley bottoms, resulting from the breaking down of crystalline limestones, and are obtained by digging pits as deep as is practicable before they fill with water, and from open cuttings in the hill-side; also from cavities and caves in the beds of granular limestone; rarely by quarrying into the rock. The limestone, the original matrix of the ruby, is identical with the rock in which opaque rubies and immense spinels are found, in Orange county, New York.

In Siam, the gem-producing district lies in the interior, not very far from Bangkok. It produces many small, but good, rubies, sapphires, &c., and is worked by various persons and companies holding concessions from the Government. The gems are found in a layer of soft yellowish sand, at a depth of from a few inches to twenty feet. The methods of working are of the most primitive Oriental kind.

In Macon county, N. C., in an alluvial deposit from the breaking down of crystalline rocks, some crystals of ruby have been found in flat, hexagonal tabular forms. A number of small gems have been cut from these, all of good color, and quite equal to the medium rubies from Burmah.

The sapphire occurs associated with the ruby, in similar situations, and is also found where rubies have not been as yet. Ceylon furnishes many of the best, but they also occur, of fine quality, in Burmah, Siam, and the Himalayas, and rarely in the Ural Mountains and the United States. In Ceylon the ruby, sapphire, spinel, alexandrite, cat's-eye, and other gems are all found as rolled pebbles in gravel in or near old river beds in the Government of Kandy.

Ratnapura, the city of rubies at the foot of Adam's Peak, at Ceylon, an altitude of 6,000 feet, is a great mining centre. Pits are sunk to the depth permitted by the pumping appliances in search of gem-bearing gravel, and when this bed is not reached within the limit of possible water clearance the pit is abandoned and trial made elsewhere. It seems as if, with the application of machinery adequate to keeping the pits clear of water, this constant abandonment of those sunk would no longer be necessary, and the profits known to have been made by native workers would be largely surpassed by the Europeans.

But the hopes entertained as to both Burmah and Ceylon have been disappointed hitherto; nor does there appear any chance of future success, unless with some improved methods of machine working. One who has been active in this gem-mining enterprise says:

"What we want is an honest machine, one that will not only obtain for us the gemiferous stuff, but would securely guard it from the pickers and stealers until it can be raised to the surface and treated under European supervision."

This is impossible down in the pits of Ceylon, as no European could long endure their heat. As a result of the work undertaken by European mechanical agency in Ceylon, the bazaars of Colombo were fuller than had been ever known before of gems of various kinds; but few of these had passed through the hands of the companies working the mines.

Nearly all the fine sapphires of the past fifteen years are from a very remarkable discovery made in 1882, in the Zenskar range of the Himalayas, in northwestern Kashmir, near the line of perpetual snow. A landslide removed an abundance of sapphires, which at first were used as gunflint by the natives. One writer speaks of having seen about a hundredweight of them in the possession of a single native. Traders, however, soon carried them to commercial centres, where their value became known. The Maharajah of Cashmere promptly sent a regiment of Sepoys to seize upon the mines and to harry the natives who were suspected of having stones in their possession or any knowledge of new localities where the gem could be found.

In our own country, corundum occurs at various places along the eastern flank of the Appalachian Mountains. At Franklin, Macon county, N. C., Col. C. W. Jenks first mined gem sapphires associated with corundum, and a number of blue, purple, and green stones, as well as rubies, up to one carat, and of fine color, were taken out of the crystalline rocks of this region. On the Missouri River on certain bars near Helena, and elsewhere in Montana, sapphires occur in an auriferous glacial gravel resting on a slaty bedrock, where they have been found occasionally with mastodon bones as a by-product in gold mining since 1864.

A careful survey of one of the best of these, Eldorado Bar, led to the estimate that it would yield some 2,000 ounces of sapphires to the acre; but only a part of these may be of gem quality. The stones found embrace a great variety of light shades of red, yellow, blue, and green. The latter color is quite pronounced, being rather a blue green than an emerald green. Nearly all of them, when finely cut, have a marvellous metallic lustre, very beautiful, and strikingly peculiar to these from this locality. Much money has been spent here in work, but no true red rubies or true blue sapphires have been found; the so-called rubies found here, if of any deep color, are generally pyrope garnets.

The finest turquoises, and richest in color, have been found, for centuries, in small veins in a clay slate near Nishapoor, near Meshed, Persia; but these mines, long so prolific, have been rudely worked, and are now almost exhausted. Many turquoises reach the market from Egypt; they are really obtained from Mt. Sinai. This variety, although generally dark blue when found, often changes in a short time to a milky-green. Very lately, also, turquoises have been announced in New South Wales, Australia, but the yield thus far has been trifling and of a very inferior quality. Santa Fé, New Mexico, is the principal source of supply, and so are the Buno Mountains, Grant county; the rocks here are yellow and gray quartzite sandstone with porphyry dykes; the sandstones are, probably, of Carboniferous age, but so uplifted and metamorphosed that their sedimentary character is obscured.

Nearly every mine so far discovered was worked by the natives before the advent of the Spaniards. The Spaniards seized upon the turquoise mines at Los Cerillos when they conquered New Mexico, and forced great numbers of captive Indians to work them; but in 1680 a large part of the mountain fell in, crushing a number of miners. This accident was the immediate cause of an uprising of the Pueblos, which led to the expulsion of the Spaniards. The Pueblo Indians procured the turquoise by cracking the rock from the sides of the mine by throwing water on the walls after they had been heated by fires built against them. This process generally injured the color. But since 1890 improved methods have been successfully used. Recent explorations have disclosed old workings in all the mines of New Mexico and Arizona; fragments of pottery, stone hammers, and similar objects are found on the ground and are discovered within the long-hidden chambers, as also in the similar case of the Arabian turquoise mines near Sinai.

Companies are now working mines near Los Cerillos, and the Buno Mountains, New Mexico, and elsewhere in that region. Much of the product is pale in color; but a great quantity of fine turquoise of robin's-egg blue, equal to the finest Persian stones, is obtained, and a single piece sold for $4,000 is reported. Many of these gems have gone to Europe, where their excellence is acknowledged; and the total American sales from 1890 to the beginning of 1894 were not less than $500,000. This has proved the most profitable gem mining in the United States.

The most productive emerald mines, affording the finest gems, are near Muzo, an Andean village, in the State of Boyaca, United States of Colombia, about eighty miles northwest of Bogota. These mines lie in a deep round valley, and have been worked for many centuries before the advent of the Spaniards. They are now the property of the Government, which rents them to a company. Emeralds from this mines the Spaniards brought from Peru and took to Spain, where they were sold within a short time to Farther India. The mine itself is an excavation about six hundred feet wide, at the base of an abrupt cliff of bituminous limestone. This company employs five or six overseers, and 300 to 400 native workmen, who are lodged and fed on the premises, and get 20 to 40 cents a day. The work is done simply by tearing off with crowbars fragments of the rock from the side of the mine, which is cut into narrow terraces, like a gigantic staircase, and throwing them into a trough at the bottom. When a certain quantity has been tumbled down, a heavy rush of water from a reservoir is sent through, breaking up and carrying away all the light rock, and disengaging the emerald crystals; these, being heavy, sink to the bottom of the sluices and are caught by the riffler. This is simply the operation of sluices, well known to placer miners for gold. The emeralds occur in cavities and among the loose black powder which fills many of the veins. The sluice boxes are watched very carefully; but, as elsewhere, a large proportion of the stones are stolen and surreptitiously sold by the workmen. All the emeralds saved are at once sent to Paris to be cut. The product is worth about $100,000 a year.

The most recent discovery of emeralds is at the Emmaville mines in the northern part of New South Wales. The emeralds occur in a granite rock, and are generally crystallized out as implanted crystals. Although 40,000 carats of these stones have been found, they are generally very pale in color, and no really fine gems have been obtained.

Magnificent emeralds have come from the rich and varied gem deposits on the Siberian side of the Ural Mountains. For nearly two centuries the Urals have been noted for their remarkable productions of beryl, emerald, amethyst, topaz, both blue and sherry color; tourmaline, alexandrite, phenacite, and other minerals and gems that for beauty and quantity have given this region a foremost place in the mineralogical collections of the world. The mines are mainly open excavations. They are worked only by peasants of the Ural Mountains when they are not busy in the fields, never by proper machinery, yet they are a source of revenue to the Russian Crown. The emerald mines of Takowaja, near Ekatherinburg, were leased for many years to a company at an annual rental of 60,000 rubles, but have not been worked since 1850, when the company could not afford to pay the rental; and until some one pays it, emeralds will not be mined in Russia again. Many fine gems were found here, as well as the alexandrite and phenacite. The magnificent beryls of Russia were found about sixty miles north of here and in Siberia.

Emerald mining in the United States is of recent development; at Stony Point, in Alexander county, N. C., in 1880, beautiful light colored specimens were found, but not in profitable quantities or of good quality. They occur in a red gravelly clay and in the gneissoid rock of the Blue Ridge; the former a decomposition of the latter. As crystals they are magnificent, but they have little gem value. All those obtained by the Emerald and Hiddenite Mining Company in a dozen years of working at these mines have not exceeded $15,000 in value. Some fifty miles west of Stony Point, in Mitchell county, a new locality was discovered in 1894, but none of the material afforded gems.

Fine beryls occur at Stoneham, Me., and on Mount Antero, Col., at an altitude of 13,000 feet, and at a mica mine near New Milford, Conn., where $15,000 worth were found between 1886 and 1889.

It is in granitic rocks that the finest yellow topaz is found, at Minas Geraes, Brazil, as well as the blue, green, and white topazes in Perm in the Ural, in Siberia, Japan, Madagascar, New Zealand, and in 1889 at Bald Mountain, near Chatham, N. H., in Colorado and Texas, and in igneous rocks in Colorado, Mexico, Australia, Straits Settlement, &c.

Garnet is a widely distributed gem occurring in many varieties in almost all mountain ranges composed of crystalline rocks, and under very diverse geological conditions. From the gold washings at Syssersk, in the Ural Mountains, come green garnets of high value, erroneously called olivine; while the Pegu mines in the Rangoon district of British Burmah and Jeypur, India, furnish the purple almandines of great beauty in unlimited quantities. Ceylon produces the honey-red essonite, which closely resembles the honey-red spessartite of Amelia Court House, Va., that has recently been found as a by-product in mining for mica. Wine-colored garnets of value also come from the Tyrol; while at several American localities, especially along the Columbia River, large quantities of purple almandite have been found in the form of rolling pebbles. The finest red garnet, however, is the blood-red pyrope, found in Bohemia, South America, and the United States. In Bohemia nearly all the garnets are in an alluvium equivalent to our glacial deposits, and associated with a variety of fossils; also with sapphire, zircon, &c. Such quantities of minute garnets remain in the sands that result from the operation of washing the soil and gravel that the sands are kept and sold for garden paths.

GEORGE F. KUNZ.

RECENT RESULTS WITH X RAYS.

Rays Modified so as to Picture Tissues—Are They Produced Without Electricity?—Prof. Thomson's Experiments on the Longitudinal Vibration Theory.

In Europe the investigation of Prof. Röntgen's discovery is being carried on with as much enthusiasm as in this country, and apparently under more favorable conditions, for the German experimenters seem to know the exact process used by Röntgen, the manner in which he applied the electricity and the force of current used, matters which apparently have not been at the command of American investigators, who have had to learn from their own experience. The German pictures in consequence have been much clearer and more astonishing than those produced elsewhere. The lines of investigation are dividing, some persons trying to find out whether new substances can be penetrated by the rays and to improve the process, others whether the rays are the product of electricity or not; and others still are puzzling with the scientific explanation of the phenomenon.

At Berlin experiments are being constantly made at the Military Academy and before the Physical Society. Recently it was discovered that the rays can be used to distinguish true pearls from false. A string of mixed real and false pearls exposed to the rays showed on the sensitized plate dark opaque masses for the real pearls, and almost transparent spots for the false. The picture of a mouse showed the most delicate details of the skeleton and faint indications of the internal organs. A broken arm that was healing showed distinctly the fracture and the knitting of the bone.

One of the Berlin professors of surgery asserts that the pictures of bones show everything abnormal in their structure, whether caused by bacteria, by disturbances of nutrition, or morbid growths. The Austrian War Office has ordered the process to be tried at the Vienna Arsenal to test the homogeneousness of gun castings, and reports from private foundries say that it has been used successfully in detecting flaws. One professor at Budapest has succeeded in reducing the time of exposure for a well-defined picture to thirty seconds, and another to two or three seconds. Mr. Porter of the University of London obtained pictures by connecting the tube directly with the secondary terminals of an Apps induction coil worked by three small accumulator cells. Dr. Neuhass of Berlin has obtained the rays from an ordinary incandescent lamp, by connecting one wire from the induction coil with the carbon filament.

Improvements have been made in the management of the rays. At Berlin the even, fine grain of different kinds of wood—pine, mahogany, walnut, alder—has been reproduced; in the first experiments, it will be remembered, wood was thought to be completely transparent to the rays. It is hoped now that it will be possible to reproduce the tissues of the human body. In London a pod of peas has been taken, showing the seeds well marked, while an Edinburgh doctor finds that tobacco is impervious to the rays.

In Paris before the Académie des Sciences pictures were shown which M. Gustav Le Bon asserts he has been taking for several years by the use of an ordinary paraffin lamp. An ordinary photographic dry plate, placed under a negative in a printing frame, the negative closely covered with a thin plate of iron, is exposed for three hours to the light of the lamp, and gives a faint but well-defined picture. If, however, a plate of lead is wrapped round the back of the frame and bent over the edges of the iron plate, so as to enclose the printing frame in a metallic frame, an image is obtained "nearly as vigorous as if no obstacle had been interposed between the light and the plate." This may have nothing to do with Roentgen's rays, but it is interesting as showing that pictures can be taken by something that penetrates opaque bodies. Another unexplained matter of the same kind is the picture of Mont Blanc taken in September, 1885, on a pitch dark night, by Prof. Zeuger of Prague. He focussed the mountain in the evening, and when it became so dark that no trace of it could be seen through a powerful night glass, put a plate in the camera, left it there till midnight, and found he had taken an excellent picture. He is now trying to explain his picture on the data of Roentgen's discovery, as caused by electrical action of the mountain itself.

Prof. J. J. Thomson of Cambridge University has been making experiments in the Cavendish laboratory on the connection of the Röntgen rays with the longitudinal waves of light. The photographic plate was placed inside the vacuum tube so as to intercept the rays between the cathode and the walls of the tube; the plate was not affected, which shows that the fluorescence of the glass is necessary for the production of the rays. Again, fluorescence was produced in bulbs without a cathode and the plate was not affected. Experiments were made by taking photographs through tourmaline plates, first with their axis parallel, then with the axis crossed, in the hope of getting some evidence as to whether the rays were longitudinal or not, but no difference could be detected in the obstruction offered to the rays by the tourmaline plates in the two cases. It was found, however, that the rays exert the most powerful effect in discharging electricity, whether positive or negative, from an insulated electrified plate exposed to their influence. A bulb separated from a charged plate by a board three-quarters of an inch thick, covered with several layers of tinfoil, acted on the plate strongly, and it was only when the thickness of metal interposed was increased to one-quarter of an inch that the effect became imperceptible. The electrified plate is a much more delicate detector of the rays than a photographic one, and is more suitable when measurements are needed. The results are not conclusive, but so far they favor the theory that the vibrations are longitudinal.

THE ORIGIN OF PARIAN.

INTERESTING FACTS FROM THE HISTORY OF THIS WARE.

Mountford, Who First Made the Mixture, Fifty Years Ago, Now Living in Poverty—Development of His Art in America—A Piece of Jersey City Vandalism.

Every one is familiar with that product of the potter's art known as Parian ware, but few are acquainted with its origin or history. It was so named because of a fancied resemblance to the fine statuary marble derived from the island of Paros, so extensively used by Italian sculptors. The body was invented about 1845, probably a few years earlier, as a result of experiments, at the establishment of Messrs. Copeland & Garrett, Stoke-upon-Trent, in search of a suitable body for statuettes and figures in the style of the old Derby and Chelsea "biscuit" ware, and was, in fact, a development of that product. A Mr. Mountford, who had been employed at the Derby works, where the biscuit ware had been produced, was working at the time for the firm and he, it is said, was the first to compound the mixtures for the new Parian body. This material proved easy to handle, required but one firing in the kiln, and was found to be admirably adapted for reproducing the finest examples of the sculptor's art. The exceeding compactness of texture, mellowness of tint, and wax-like transparency which characterized it soon made it exceedingly popular, and within a very short time fully 100 factories were producing it in the forms of vases, figures, pitchers, and mantel ornaments. While hundreds of manufacturers and dealers have grown rich through making and selling Parian wares, the originator, Mr. Mountford, is said to be still living in retirement, disabled, neglected, and practically forgotten.

It is little more than fifty years since Parian was introduced, yet it sprang so rapidly into favor and the manufacture has been so well established, both in Europe and in this country, that we are accustomed to look upon it as of much greater age. It was made in the United States within a year or so after its introduction in England, first, perhaps, fully as early as 1846, at Bennington, Vt., where ornaments, pitchers, and vases were produced, and two years later by Charles Cartlidge, at Green Point, L. I.

English workmen brought a knowledge of the processes of manufacture to America, and for some years met with considerable success in producing and selling it. But after the art had flourished here for ten years or so it seems to have fallen into neglect, and it was not revived until just before the Centennial Exposition of 1876, when some Trenton potters commissioned Mr. Isaac Broome, an American sculptor, to

THE FIRST PARIAN WARE MADE IN AMERICA, BENNINGTON, VT., 1846.

model a fine series of Parian statuettes, vases, and portrait busts, which far exceeded, in quality, design, and workmanship, anything previously attempted in this line in the United States.

The best Parian made in this country previous to the middle of this century was produced at Green Point, by Mr. Cartlidge. He executed from models prepared by his brother-in-law, Josiah Jones, at that time the foremost modeller in America, a series of portrait busts, in a fine-grained body, fully equal to the best wares of Europe. These included Washington, Webster, Zachary Taylor, Henry Clay, Chief Justice Marshall, and others, and it is doubtful if anything better of the kind has been made since on this side of the water.

CASTLE MATCH SAFE IN PARIAN, MADE BY CHARLES CARTLIDGE, GREEN POINT, 1848.

Among the earlier Parian wares were many examples with relief designs in white on a pitted blue ground. Matt Morgan introduced this style in his Cincinnati pottery a few years ago, as a new discovery, which it doubtless was to this versatile artist, who during the few years previous to his death was conducting experiments along numerous original lines in pottery making. Yet many of the English potters and Messrs Lyman and Fenton of the Bennington works were producing blue Parian half a century ago. The process of applying the blue color to the surface of the ware was so ingenious that it deserves a brief description here. It consisted of bluing the interior of the moulds, in which were cast such pieces as jugs and vases, with a mixture of blue "slip" or liquid clay. The ground of the piece, which was covered with little hollows like a thimble top, was reversed in the mould, and it presented the appearance of a rough surface composed of thickly set little protuberances. The slip was then poured in and the blue pigment attached itself to the clay, which adhered to the mould after the surplus had been poured out; in a few moments the article could be separated readily from the mould, which was made in parts. The result was a perfectly moulded vessel of Parian body with decoration of blue and white, made in one operation, after which the piece was sent to the kiln to be fired. The purpose of the little pit marks or stipple was to prevent the color from running and forming pools or blotches in the finished ware. This bluing of the moulds was a considerable business years ago and was done by women, who became very expert in the work and commanded better wages than their sisters who were employed in other branches of the trade.

RELIEF PORTRAIT OF ZACHARY TAYLOR, BY CHARLES CARTLIDGE.

Among other designs for the Centennial Exposition a series of fashion vases was prepared illustrating the styles of dress of the last century compared with those of the present. These were modelled by Mr. Broome in low relief on original shapes and were different from anything ever before produced. One of these vases showing a gallant of the last century and a greyhound is shown here.

Plain white Parian ware always has been popular with the people, on account of its soft, satiny, ivory appearance and absence of glazing. It is particularly well adapted for portrait busts and the reproduction of sculptures, and, indeed, the better qualities of Parian china so closely resemble marble that it is often difficult for the inexperienced to detect the difference. Several establishments in the United States still produce Parian art goods, and a portrait modeller of Trenton is engaged now in executing a series of ten-inch busts of celebrated Americans, to be reproduced in Belleek bisque or Parian, in imitation of the finest statuary marble.

The earlier modellers of Parian designs in this country attempted very little in the way of

PARIAN "FASHION" VASE.

originality, contenting themselves with reproducing the patterns which had appeared in England. This accounts for the fact that one occasionally finds on some of the earlier American pieces relief designs of mounted knights in armor, representations of chivalric combats, wandering troubadours with harp and lute—devices which hardly could have originated in this country, although they are shown to be of American workmanship by the marks upon them. Later, however, American modellers began to design new forms and to originate appropriate decorations, using as motives the Indian corn plant, the tobacco blossom, the cotton boll, and during the late civil war some of the Trenton potters produced patriotic designs, such as water pitchers with figures of the American eagle in relief, and with representations of incidents of the war, such as the shooting of Ellsworth at Alexandria in 1861.

The old Jersey City pottery was perhaps the most interesting establishment of its kind in the United States from an historical point of view, as it was the cradle of the pottery industry in this country. Here many of the most successful potters learned the trade, from 1825 until a few years ago, when the old landmark was torn down to make room for modern improvements. The upper floor of the building was stored with hundreds of curious old plaster molds which had accumulated during nearly seventy years. Many of these had been modelled by celebrated artists, and had been used in the manufacture of Parian ware. There were molds of quaint toby jugs, hunting pitchers with hound handles, apostle jugs, figures of the Saviour, jugs with portrait medallions of eminent men, sailors' pitchers with cable and anchor in relief, and a vast variety of discarded patterns—a priceless collection of historical relics, illustrating the progress of the potter's art almost from the beginning; and these were loaded into carts as so much rubbish, and were hauled into the country, where they were dumped on the meadows and broken into pieces. This act of vandalism destroyed in one day the results of the expenditure of thousands of dollars and the tangible records of many years of patient labor, besides robbing the historian of much invaluable material for future chronicles of the art. More than one public museum and many a potter would have spent willingly a considerable sum to secure this unique series of designs illustrative of the earlier phases of American ceramic art.

EDWIN ATLEE BARBER.

THE MURDERED BIERSAEUFER.

An Object Lesson for a Brooklyn Policeman Who Was Fond of Hold-ups.

Hold-ups have been very frequent in Brooklyn of late. Most of them occur late at night and are done by the police for a purpose, the purpose being to discover some burglar or sneak thief escaping with his booty. So many house robberies have been reported that orders have gone forth from headquarters to arrest all persons carrying suspicious-looking bundles at night. As a result, it isn't safe for the home-returning nocturnal Brooklynite to carry to-morrow's breakfast in his hand, and a man might better pay expressage on any bulky bundle than try to get it home himself. One policeman in the fashionable part of the Hill has been particularly active in this respect and has made several clever captures, notably one of a boy and a beefsteak going home together late at night, whereby the boy was held in the station house over night and his family breakfasted hungrily in the morning. Consequences followed, and the Captain of the precinct warned the officer to be a little more careful in future.

But the detective instinct was strong upon him. It cropped out one night last week when he beheld an elderly citizen walking up Jefferson avenue with a very large bundle in his arms. Now it happened that this citizen was a law-abiding merchant, and a friend of the Captain of that precinct. He knew the policeman, although the policeman didn't know him, and secure in the consciousness of virtue and his pull at the station house, he decided to have some fun on the strength of his bundle, which contained nothing more contraband than the costume he had just worn at a fancy-dress ball where he had chanced to meet the Police Captain. The costume consisted of a very loud check suit, an emigrant's cap, a long pipe, a huge scarf with a cut-glass headlight pin in it, and some padding to give the appearance of an enormously fat man. There were also some make-up materials in the bundle. It was something of a load to carry, and the citizen had just paused for breath when the policeman approached him.

"What have you got in that bundle?" he demanded.

"Eh-er-er, what? what's that?" stammered the German, in well-feigned embarrassment.

"I say, what's in that bundle?" repeated the suspicious policeman, poking it with his club.

"Look out! Don't do that," cried the citizen in distress, "you'll break it."

"Break what? Come, speak up now. No use trying to fool me."

"It's a combination sewing machine, typewriter, and baby carriage. I'm taking it home to my wife."

"Oh, come off," returned the officer. "Say, I think you're trying to give me a steer. Will you open that bundle or will I?"

"Oh, my God! I am discovered," moaned the German in heartbroken tones. "Can't I fix this up with you? I'm ruined if it comes out."

"Robbery, hey?" said the policeman in high exultation. "This'll give me a good stand with the Cap."

"Robbery!" groand the other. "Oh, it's worse than that. Look there," he added in a mysterious whisper, as he unrolled his bundle, displaying the contents; "they're his clothes."

"Clothes?" echoed the copper in amazement, without stopping to look at them; "whose clothes?"

"His. That's all that's left of him on this earth. His family will never see him again. Aha! I've fixed him."

"Murder, is it?" cried the copper, a mighty pride mingling with his horror. "Who was it you killed? How did you kill him?"

"Herr Bummler Biersäufer. No man shall ever know how. We went out together. He insulted me and he disappeared. Ha, ha! Ho, ho! Hist! I'll give you half the money if you'll help me bury these clothes."

"Come along to the station house," cried the copper, collaring his man and feeling to see if his revolver was all ready for use. "Pick up that bundle and march."

As the Captain had just arrived when the proud and happy copper got to the station house the prisoner was delivered over to him in his private room. The copper didn't see the look of amazement that passed over his superior's face, nor did he notice the wink with which the prisoner favored the Captain, but he did hear the latter say that he wished to speak to the prisoner alone, so he retired. Ten minutes later he was summoned back. A very fat, red-faced German, clad in a suit of enormous checks, was talking to the Captain as he entered.

"What did you do with your prisoner?" asked the Captain. "I'll see him now."

"Why, I left him here," gasped the copper. "He was here when I went out."

"Nonsense," said the Captain severely. "Wouldn't I have seen him? Either you took him out with you or he must have slipped through the door with you. This is bad business."

"But—but—this gentleman. Didn't he see him; doesn't he know something about it?"

"No; he has been here talking to me. This is Herr Bummler Biersäufer, the celebrated German expert, who——"

"Biersaufer!" shrieked the policeman; "why, he's murdered. My prisoner was the man that murdered him."

"Was ist das?" inquired the German. "Was you say I vas murdert, eh? Ich bin nicht already dead. Nein! I come here to a veller get vot ropped my pants—und—coat away. Yust like dese I haf by my back."

"That's the fellow I had!" exclaimed the policeman. "He said he'd murdered you."

"You go out and see if you can trace him," ordered the Captain. "Report to me in an hour. Hustle now, and you may get him."

After the officer's departure Herr Bummler Biersaufer shed his vermilion complexion, shook off his corpulency, changed his clothes, and became once more the suspected murderer of his unslain self and thief of his unstolen garments, and he and the Captain had several drinks, while the fly copper rushed madly around the streets in search of him. Later the Captain had a confidential talk with the copper, and thereafter that spry officer conceived a dislike for men with bundles. He hasn't made a suspect arrest since his little object lesson.

MOSQUITOES AND FLEAS.

HOW TO PROTECT OURSELVES FROM THESE COMMON PESTS.

A Circular from the Entomological Division of the Department of Agriculture—Means to Prevent and Other Means to Destroy.

We are accustomed to think of but a single species of mosquito, and of this as occurring in most parts of the country, but as a matter of fact Ostensacken's "Catalogue of the Diptera" records twenty-one species from North America, and Mr. F. W. Urich states that he has observed at least ten species in Trinidad. Twenty species are contained in the collection of the United States National Museum.

The following statement concerning the life history of these insects is based upon a series of observations made in this division upon the development of two summer generations of *Culex pungens*, one of our commonest and most widespread species. The writer has seen specimens of this insect from New Hampshire, Massachusetts, New York, Maryland, District of Columbia, Illinois, Minnesota, Kentucky, Nebraska, Louisiana, Georgia, and the island of Jamaica, West Indies. No doubt it is also abundant in New Jersey.

Egg laying takes place at night. The eggs are deposited in boat-shaped masses on the surface of the water, the number varying from 200 to 400 in each mass. The eggs may hatch in sixteen hours. The larvæ live beneath the surface of the water, coming to the top at frequent intervals to breathe. The larval state may be completed in seven days; the pupal state may last only twenty-four hours. An entire generation in summer time, then, may be completed in ten days. This length of time, however, may be almost indefinitely enlarged if the weather be cool. There are, therefore, many generations in the course of a season, and the insect may breed successfully in a more or less transient surface pool of water.

Mosquitoes hibernate in the adult condition in cellars and outhouses, and under all sorts of shelter. The degree of cold makes no difference in successful hibernation; mosquitoes are abundant in the Arctic regions.

Of remedies against mosquitoes in houses, the best is a thorough screening of windows and the placing of nets about beds. If the insects are troublesome in sitting or sleeping rooms during the evening, the burning of pyrethrum will so stupefy them as to make their presence unobjectionable. Pyrethrum for this purpose should be prepared by moistening the powder sufficiently to allow of its being roughly moulded by hand into little cones about the size and shape of a large chocolate drop. These cones are then placed in a pan and thoroughly dried in an oven. When fired at the apex, such a cone will smoulder slowly and send up a thin column of pungent smoke, not hurtful to man, but stupefying to mosquitoes. In actual experience, two or three such cones burned during the course of an evening have given much relief from mosquitoes in sitting rooms. It does not kill the insects, however, and is at best but a palliative.

The mosquitoes found on the ceilings of bedrooms in the evening may be quickly and easily killed by means of a small, shallow tin cup, such as the lid of a blacking box, nailed to the top of a stick, and wet inside with kerosene. This cup is placed over the quiescent mosquito, which immediately drops or flies against the oily surface and is killed. But altogether the most satisfactory means of fighting mosquitoes are those which are directed to the destruction of the larvæ or the abolition of breeding places. These measures are not everywhere feasible, but in many places there is absolutely no necessity for the endurance of the mosquito plague. The principal remedies of this class are three: The draining of ponds and marshes, the introduction of fish into fishless pools, and the use of kerosene on the surface of the water.

The draining of breeding pools needs no discussion. Obviously the drying up of such places will prevent mosquitoes from breeding therein, and the conditions of a successful application of this measure will, it is equally obvious, vary with each case.

The introduction of fish into fishless ponds is feasible and advisable in many cases where the use of kerosene on the surface of the water would be thought undesirable. In tanks supplying drinking water, for example, fish would destroy the mosquito larvæ as fast as hatched. A case is recorded in "Insect Life" (Vol. IV., p. 223) where carp were employed in this way with perfect success by an English gentleman living in the Riviera. At San Diego, Tex., the people use for this purpose a little fish called there a perch, the species of which the writer has not been able to ascertain. Probably the common voracious little stickleback would answer admirably as a mosquito destroyer.

Probably the best, and certainly the easiest, of wholesale remedies against mosquitoes is the application of kerosene to the surface of breeding pools. The suggestion that kerosene could be used as a remedy for mosquitoes is not new, and has been made more than once. Exact experiments out of doors and on a large scale were made in 1892 by the writer. These and subsequent experiments show that approximately one ounce of kerosene to each fifteen square feet of water surface on small pools will effectually destroy all the larvæ and pupæ in that pool, with the additional advantage that the adult females, not deterred from attempting to oviposit, are killed when they alight on the kerosene-covered water. Ordinarily the application need not be renewed for a month, though varying circumstances may require more frequent applications.

Since 1892 several demonstrations, on large and small scales, have been made of the practicability of this method. Under the writer's supervision two localities were rid of mosquitoes by the use of kerosene alone. It will, however, probably not prove feasible to treat in this way the large sea marshes along the coast where mosquitoes breed in hordes, although even here the remedy may prove to be practicable under certain conditions and in certain situations. In inland places, however, where the mosquito supply is derived from comparatively circumscribed pools, the kerosene remedy will prove most useful. In some California towns, I am informed, the pit or vault behind water closets is subject to flushing with water during the irrigation of the land near by. A period of several weeks elapses before more water is turned in, and in the mean time the water in the pit grows stagnant and becomes the breeding place of thousands of mosquitoes. Where, as in certain towns and cities, house drainage runs into such a pit, and an outdoor privy with a seldom closed door is built over it, mosquitoes will breed all summer in the fluid contents of the vault, and, of course, will infest all the adjacent houses.

In such cases a teacupful of kerosene poured into each vault at intervals of a month or less would greatly decrease the annoyance from mosquitoes, if it did not altogether prevent it. This is a case where the coöperation of neighbors is most essential; every householder in a given neighborhood should see that his vault is treated with kerosene regularly and often. The cost is so trifling that it need not be considered.

Where, as is the case at many country homes, rain water is collected in barrels or hogsheads for one purpose or another, mosquitoes may and do breed in numbers in such vessels. If the water as used be drawn from the bottom of the cask it will do no harm to pour in kerosene, since the oil will not be drawn out with the water. At all events, such receptacles should be covered at night to prevent egg laying.

The question, what is the best way to cover with kerosene the surface of a pool of some size is apparently needless, since the operation is obviously simple, but such a question has been asked of the division. Simply pouring the oil on from any point of the shore will answer tolerably well, since it will spread of itself, but if for any reason it is desired to coat the pool rapidly with kerosene, it may be advisable to spray the oil through a spraying nozzle, either from the bank or from a boat. The method of application will vary with each case, but in the class of pools which can be most advantageously treated, namely, those of small size, the oil can be well spread by throwing it on to windward with a wide sweep of the arm.

Judging from the specimens of fleas sent to the division of late years, with complaints of houses infested with them, the human flea (*Pulex irritans*) is not the species most likely to occur in great numbers in dwelling houses, but rather the common cosmopolitan flea of the dog and cat *Pulex serraticeps*. A house may become infested with this species, even though no domestic animals be kept, for a visitor at a house where such pets are maintained may be the means of carrying home with him one or two female fleas, which will stock his own premises. Of course, where a pet dog or cat is kept, the source of the infestation is manifest.

The worst cases of infestation reported to this division were where houses had been temporarily unoccupied during the summer. Such houses often become more or less damp, and as a rule the customary sweeping of the floors is interrupted, thus furnishing the very conditions under which, as we shall see, fleas most readily propagate.

The eggs of *Pulex serraticeps* are deposited among the hairs of cats and dogs, but as they are not attached to the hairs, numbers drop off whenever the infested animal moves or lies down. For experimenters who desire to follow out for themselves the life history of the species, an easy way to collect the eggs is therefore to lay a strip of cloth or carpet for the animal to sleep upon and afterward to brush the cloth into a receptacle in which the eggs will be found in numbers if the animal is infested. In this lies a hint for the housekeeper who would keep a pet dog or cat and yet avoid an outbreak of fleas in the house. Provide a rug for the cat or the dog to sleep on and give this rug a frequent shaking and brushing, afterward sweeping up and burning the dust thus removed. As all the flea eggs on an infested animal will not, however, drop off in this way, and those which remain on it will probably develop successfully, it will be found wise occasionally to rub into the hair of the dog or cat a quantity of pyrethrum powder. If thoroughly applied it will cause the fleas to fall off in a half-stupefied condition, when they, too, may be swept up and burned.

In the observations made at this department upon this species of flea during the summer of 1895, some difficulty was found in preserving just the right degree of moisture to enable the insect successfully to transform. An excess of moisture was found prejudicial to the development of the species, as was too great dryness. The observations showed, however, that at Washington in summer an entire generation may develop in a little more than a fortnight. Hence a housekeeper shutting up her house in June, for example, with a colony of fleas too small to be noticed inside it, need not be surprised to find the establishment overrun when she opens it up again in September or October.

The larvæ of the dog and cat flea will not develop successfully in situations where they are likely to be disturbed. The use of carpets and straw mattings, in our opinion, favors their development, since the young larvæ can penetrate the interstices of either sort of floor covering and find an abiding place in some crack, where they are not likely to be disturbed. It is comparatively easy to destroy the insect in its early stages (when it is noticed), as is shown by the difficulty of rearing it, but the adult fleas are so active and so hardy that they successfully resist any but the most strenuous measures. Even the persistent use of California buhach and other pyrethrum powders was ineffectual in one case of extreme infestation, as was also, and more remarkably, a free sprinkling of floor mattings with benzine. In this instance it was finally necessary to take up the floor coverings and wash the floors down with hot soapsuds in order to secure relief from the flea plague. In another case, however, a single liberal application of buhach was perfectly successful, while in a third a single thorough application of benzine completely rid an infested house of fleas.

To sum up: Every house where a pet dog or cat is kept may become seriously infested with fleas if the proper conditions of moisture and freedom from disturbance exist. Infestation, however, is not likely to occur if the (bare) floors can be frequently and thoroughly swept. When an outbreak of fleas comes, however, the easiest remedy to apply is a free sprinkling of pyrethrum powder in the infested rooms. This failing, benzine may be tried, a thorough spraying of carpets and floors being undertaken, with the exercise of due precaution in seeing that no lights or fires are in the house at the time of the application, or for some hours afterward. Finally, if the plague is not thus abated, all floor coverings must be removed and the floors washed with hot soapsuds. This is a useful precaution to take in any house which it is proposed to close for the summer, since even a thorough sweeping may leave behind some few flea eggs from which an all-pervading swarm may develop before the house is reopened.

L. O. HOWARD, Entomologist.

SNAKE HUNTING IN INDIA.

A Day's Campaign Against the Fierce and Deadly Hamadryad.

From the Philadelphia Times.

One of the most interesting sights to the tourist in India is the snake house in Madras. It is maintained by the Government, and contains representatives of every native reptile. The venomous class are kept separate, and the terrible hamadryad has a den to himself, for he is a snake eater and would soon depopulate all the other cages. Of all the poisonous species he is the most aggressive and deadly, with an average length of twelve feet and fangs three inches long.

It is January, the heat damp and stifling. The cobras are all active and employed in running along the glass fronts of the houses, pressing their heads against the glass and leaving behind a green, glutinous streak. This is their poison, with which the fangs are overcharged. The keeper will show you a pint glass cup that has been scraped off. It looks like dried mucilage.

There is a rock python in the snake house thirty-four feet long. One crush of his steel muscles would end a man's life as affectually as a cannon ball, but he hangs inert from a tree branch and the native attendant cleans his quarters without molestation. Not so inert is the hamadryad. As soon as your shadow falls on the glass he makes a dart and races up and down the cage, following your movements. Nothing but the quarter inch of glass saves you from death. Capt. Kew of the Madras Infantry saw one pursue a native along the high road. The man dropped his turban. The snake pounced on it, coiled and bit, and then resumed its pursuit of the man, who had sprung into the river and boarded a native boat. The snake was at his heels and was killed by strokes of an oar.

The hamadryad has about the same range as the cobra, but its best known habitat is the country of the Gonds in Central India, in the Vindhya Mountains. Here the land is covered by dense thickets of wild fig trees, and on these the snakes lie coiled. The people were all robbers fifty years ago, and no native force would invade their coverts until Sir James Outram took things in hand. He captured some of their chiefs, made friends with them, and organized a corps of Gonds, who brought the district into subjection, but the snakes remained, and in 1840 a regiment of Sepoys passing through the district had five men killed from snake bite.

In 1894 Capt. Selig of the First Gondas Regiment, stationed at Indur, determined to have a snake battle. With three companions and two Ghorkas—these men from the Mountains of Nepaul are utterly fearless of wild animals, and, unlike the Hindoos, stick to their officers till death—they started.

A coil of wire netting five feet high and two hundred feet long was loaded on a camel and the party started. The Ghorkas were armed with korbashes, or six-feet whips made of buffalo hide and tough as wire.

The wild fig tree grows low, but is enormously broad; the limbs are thick as a man's body, full of cavities, and in these the snakes coil. A site was found on a bare hillside, the netting was set in a circle, and was staked fast. In front was the high road and fifty yards away a dense fig thicket. Through the woods ran a nullah or ravine filled with high reeds, and this it was proposed to fire. One of the men threw stones at a huge trunk near the road, and in an instant a long black and yellow band slid to the ground. The man stood firm, holding his jacket in front. In an instant the hamadryad struck it, dashing his head against the man's body and nearly knocking him down. The reptile's fangs caught in the cloth, and the Ghorka plied his whip, and, lashing the ground like the stroke of a flail, the snake died. He was eleven feet long. The men were now cautioned not to be reckless, and the dried grass in the nullah was fired. Under the hot sun it quickly spread to the grass in the forest, and every one got inside of the netting and waited. Soon the long grass began to move sinuously and a loud hissing was heard. The smoke lay dense under the trees, and the serpents made for the open in leisurely fashion, their long, pointed heads up, waving from side to side, crossing each other in involved folds.

And now the broad road, white in the sun, was streaked with black and yellow that glowed like metal, and there was a subtle, creeping odor—not unlike valerian. They had not scented an enemy. Suddenly one of the snakes saw the forms behind the net, twenty yards away, and raised three feet, gave a prolonged hiss, and dashed straight for his enemy. The guns opened, the net shook as the reptiles struck the wire, and the Ghorkas yelled as they used their whips. Twice a head rose above the defence, the eyes darting fire. As fast as the breechloaders could be fired the fusilade was kept up. The road was full of a wriggling mass. In blind rage they struck one another, coiled, and fought. It was a horrible sight to the nervous Europeans, but the Ghorkas wanted to charge, and could scarcely be restrained. Behind the forest was glowing like a furnace, the hot smoke blew right in the men's faces, and a retreat was ordered up hill. If the snakes get around the netting, look out, was the thought. Fortunately, the column turned south on the road and were shot down.

"See, see! There comes the big fellow." Sure enough, one not less than twenty feet came on; his huge folds forked along the path. The others parted, as, with head up, the monster moved along. Two shots were fired into the body. With a tremendous hiss the head reared six feet in the air and then buried its fangs into its own flesh. The smoke and heat bewildered the column and it slowly moved down the road. In spite of orders the Ghorkas charged down the hill and attacked the outsiders. Some showed fight, but the long whips were too much for them. Racing out of the wood came three jackals, their coats smoking, and ran right over the snakes and were bitten. They kept up a gallop for about 100 yards, when two squatted. The other ran a short distance further, and then toppled over. All were dead when examined ten minutes later.

A short distance away was an old Mahratta fort with high bulwarks, and up these the reptiles swarmed and gathered in a mass, writhing and striking, and for an hour the guns cut them up, the Ghorkas, barelegged, racing after the outsiders, and fortunately escaping the fangs.

It was stifling hot, with the thermometer 110°. A cloth was rigged for shelter and provisions were brought out.

And now a survey of the field was made. Sixty had been killed in front of the netting, but the heat was too great for any further count, and an estimate of not less than 300 was thought moderate. The big fellow was seventeen feet long, and his skin and head, stripped, was a rare trophy. The Gonds all declare that in every colony of the hamadryads there exists a chief who rules the others. In his belly was found one of his own species about nine feet long, thus justifying the scientific name "Ophiophagus," snake eater. And now the Ghorkas began a performance. With their huge, crooked knives they cut off the head of every snake. The British Government gives about three cents for this part of a venomous reptile. The Ghorkas took off their baggy breeches, the legs were tied, the snake heads loaded therein, and so the journey was made homeward.

IN THE LUMBER CAMPS.

THE IMMENSE BUSINESS DONE IN THE NORTHWEST.

Festive Seasons Among the Lumbermen—Cupid Finds Devotees There—All Take Part in the Wedding Ceremonies.

From the Chicago Chronicle.

The formerly vast and seemingly inexhaustible forests of the United States are threatened with utter and swift destruction. Such is the warning of the Government Forestry Bureau, and figures are furnished to substantiate this grave opinion. The total forest area in the United States is estimated at 495,000,000 acres, or 26 per cent. of the total area, Alaska and Indian reservations are not included.

The present annual requirements for consumption of forest products in the United States are approximately over 24,000,000,000 cubic feet, made up of the following items: Lumber market and manufacturers, 5,000,000,000 cubic feet; railroad construction, 600,000,000 cubic feet; charcoal, 250,000,000 cubic feet; fences, 500,000,000 cubic feet; fuel, 18,000,000,000 cubic feet, and mining timber, 150,000,000 cubic feet. If the reader will stop to consider that these million figures are given in "cubic" and not "square" feet the amount becomes almost incredible.

At the present rate of cutting the remainder of the forest land in the United States cannot long meet the enormous demands on its resources. Of the two most important timbers for building purposes the merchantable white pine of the Northwest and of New England is practically gone, very little remaining. Of the merchantable long leaf pine of the South only about 1,500,000,000 cubic feet remain. The valuable ash will probably be the first to be exhausted. Walnut trees are also going fast. Forest fires are estimated to destroy values of about $15,000,000 annually, but during the year of 1894 that amount appears to have been lost in Minnesota and Wisconsin alone.

A national organization, known as the American Forestry Association, composed of delegates from all the States, meets annually to discuss the measures needed for the protection of the native forests. There are Forest Commissioners appointed in several States, but political machinations prevent much efficient work from being done. A bill to provide a systematic forest administration for Colorado, New Mexico, California, Arizona, Wyoming, Oregon, and Washington was passed in both Houses of Congress last year, but failed to become a law.

The individual States have striven with more or less success to encourage tree planting by appointing a certain day in the year as arbor day, for the voluntary planting of trees by the people. There is no enterprise which should receive more encouragement from every resident and true lover of the country than this. The children of the public schools have lately been encouraged in the active participation of tree planting, and it may be said that Young America has embraced the opportunity with all its wonted zeal. The second Wednesday in April is set aside in most States as arbor day, and it would be a direct blessing to the country if every teacher and school officer would impress its importance on the children in their charge.

Wisconsin, Michigan, and Minnesota still produce enormous quantities of timber, and are as yet the most favorable places to see the old-fashioned and up-to-date lumber camps. Before the approach of winter the sawmill owner projects his campaign for the logging season, planning it with all the care of a military campaign, and frequently with more forethought and ability. He selects his places of operation in the woods, locates his camps, builds his shanties, and makes his logging roads. These are best done before the snow comes. A logging camp is located with reference to the nearest access to the timber intended to be operated upon. Though the work of hauling never begins till winter has fairly set in and there is snow enough to make good roads, the thrifty logger is actually at work considerably before. He is chopping down trees, sawing them into logs of proper length, and "skidding" them by the use of teams. Skidding is hauling them together into large piles and placing them on skids convenient for loading them on the sleds. A good team will haul from 1,000 to 2,500 feet from the woods to the stream. As 1,000 feet of logs will weigh more than two tons, an estimate may be made of the immense loads thus hauled. After a successful winter's work the river bank is piled full for miles along the stream with the log harvest until some time during the month of March, when the season generally ends.

In the States mentioned more than 75 per cent. of the men engaged for this rough work are Scandinavians, the Swedes possibly leading in number. They are a well-paid set of men and ask no favors, and though they sometimes make things pretty lively in towns adjacent to the lumber camps, they are conscientious enough to pay for any damage done. If the camps are located too far from the logging camp, the men spend their leisure time the best way they know how.

They smoke, wash, and shave, and mend their dilapidated garments. They read every available printed scrap to be found lying about the shanties, and hail with delight a newspaper, be it ever so old. The everlasting pack of worn and greasy cards is resurrected from the bottom of the chest and innumerable games are played from early morn till far into the night. These intervals of rest are offset by days when the men have to work like demons to accomplish a certain task. In the spring there occur the inevitable log jams. The log run of a good-sized mill reaches often 50,000,000 feet, and will occupy a river for from five to ten miles of its length. Then fifty men or more, armed with their eight-feet-long driving pikes, are skipping from the swift flowing, bobbing logs to prevent them from being locked in a jam. When such a thing happens the logs are piled up into a monster barricade across the entire width of the river.

While the life of the lumbermen in the forests of the Northern States is far from enviable, it is by no means devoid of pleasant incidents. It is, perhaps, because these are few and far between that they are all the more keenly enjoyed by these rugged sons of nature, who really form a distinct type from the ordinary farming population. Like the cowboy on the plains, they are gradually being pushed to extinction, and with them will disappear the magnificent forests that just now are being devastated by the all-absorbing greed of unscrupulous sawmill owners. These people often are found occupying quite large settlements in the deep woods. Here the customs of their native land still prevail, with very slight modifications. Social and religious affairs partake in a large measure of a distinct foreign flavor. An American here would not require any great stretch of imagination to fancy himself in some remote corner of northern Europe instead of in his native land.

Recently there was a wedding in one of these settlements, which was an extremely picturesque and interesting event to the newspaper man who happened to be present. He was invited to participate in the festivities, and rashly accepted the invitation, little dreaming what a complicated affair it was to be.

Banns had been proclaimed for several consecutive Sundays in the modest little church that Ole Knutson and Britta Bengtsdotter were to be joined in wedlock. There was as much stir in this little community on this account as was occasioned by the Marlborough-Vanderbilt affair in New York. All the men, women, and children for miles around considered themselves, according to the old country custom, as invited to the festivities.

Now, a Swedish or Norwegian wedding is a thing that is never settled in one or two days. It generally takes that many weeks for its preparation, and the same number for its celebration. Each guest usually contributes his share, no matter how humble, and everything is accepted with the warmest of thanks, not with surprise, but as a matter of course. Beer, wines, and liquors are found in altogether too liberal quantities, and indulgence is in proportion to the supply. As to eatables of every description, there is practically no limit. Among the quaint customs observed on this occasion was noted one very curious. A number of the nearest of the bride's and bridegroom's relatives went into the wood at midnight and formed a circle where three roads meet.

They then asked a number of questions addressed to some unseen being or spirit. What the questions or answers are none of the party is permitted to divulge, as such a thing would surely bring constant ill luck to the prospective bride and groom. The following day the young girls who are to serve as bridesmaids congregate at the home of the bride. In these regions there is no particular display of flummery. The girls are all neatly dressed in their best gowns and kerchiefs. The bride was attired in the customary veil over her very handsome, though by no means extravagantly expensive dress. No orange blossoms were seen. Instead of these the bride wore a little crown of myrtle. The bridegroom was a sturdy young fellow, foreman of a sawmill. He was rigged out in top boots and sack coat, but had managed to get hold of a stovepipe hat, which was viewed with mingled awe and ridicule by most of the guests. The bride and groom were driven to church in an ordinary open bobsled, and the rest of the family followed in similar conveyances. It was a singularly picturesque sight to see this strange wedding procession wind its way through the deep snow to the little church. On the return trip there was music galore, furnished by an accordion and a cornet that had seen better days, but a jollier crowd was never brought together. Refreshments were served in superabundance, and dancing was kept up all night. These festivities are continued as long as the custom prescribes, generally at least three days. After this the hard, rough labor of the men is unshrinkingly resumed, with a grateful thought that even in their life there is an occasional gleam of sunshine.